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ABSTRACT

Achievement patterns and the relationship to achievement of other-direction and attitudes toward women were investigated in 43 10th-grade females with IQ scores of above 110. Achievement indices consisted of grades, as well as mathematical and verbal achievement test scores. Beginning at Grade Six, grades of underachievers differed significantly from those of achievers. Subjects scoring high on other-direction demonstrated significantly lower mathematical achievement. A traditional view of women's roles was significantly related to lower achievement in mathematical test scores and grades. Results are discussed in relation to research in the areas of locus of control, achievement, and underachievement in bright females. (Author)

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Academic Underachievement, Other-Direction, and

Women's Role in Bright, Adolescent Females

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The relative paucity of research concerned with the early identification of underachievers and the variables associated with this underachievement has been noted in a recent review (Asbury, 1974). This comment is particularly pertinent to the examination of underachievement in bright females. Shaw and McCuen (1960) first reported sex differences in the patterns of underachievement in bright high school students; their data revealed that while male underachievers demonstrated a consistent pattern of underachievement from first grade through high school, female underachievers did not differ from female achievers until grade nine with a downward trend in the former group's grades beginning at grade six. These patterns of achievement would appear to have significant import for the investigation of underachievement; however, the implications of these findings have not been pursued. The present study was designed for this purpose.

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The significance of Shaw and McCuen's findings lies in the decline in the female underachievers' grades in early adolescence. The present paper considers two aspects of adolescence as having a potential impact on this decline: (1) the increasing influence of peers and peer values which are incongruent with academic achievement, and (2) the increasing awareness of one's sex role.

Scales of other-direction and attitudes toward women were selected to measure the impact of these changes. It was anticipated that those subjects revealing a stronger other-direction orientation and a more traditional view of women's roles would be more influenced by these changes in adolescence and, hence, would demonstrate lower levels of achievement than subjects with opposing orientations. The measure of other-direction was designed to reflect that factor of locus of control having to do with one's susceptibility to the opinion of others (Collins, Martin, Ashmore, & Ross, 1973).

The concept of locus of control has come under criticism in recent years as a multi-dimensional construct. Two of the more common factors identified are: (1) the basic predictability of one's environment and one's skill at manipulating that environment, and (2) the origin of a person's goals and motives. Other-direction, then, is a measure of this latter aspect of locus of control which does not incorporate the personal potency factor of locus of control. Past research has often resulted in conflicting findings concerning the relationship between locus of control and achievement, particularly with females (Collins et al., 1973; Crandall, Katkovsky, & Crandall, 1965; Maccoby & Jacklin, 1974). This research may have been confounded by the variable of inner-other direction which, in itself, might be a more powerful predictor of academic achievement for females than the multi-dimensional locus of control construct.

The purpose of this research was to attempt to replicate the findings of Shaw and McCuen and to investigate the relationship of other-direction and women's role to achievement. In so doing, it was hoped that some clarity might be brought to the conflicting findings concerning both female achievement and locus of control and its relationship to achievement.

Method

Subjects

The subjects consisted of 43 tenth-grade girls in a primarily middle-class school in San Antonio, Texas. Subjects were restricted to students receiving an IQ score of above 110 on the Otis-Lennon Test of Mental Maturity and were classified as achieving or underachieving based upon a class average of 79.62 for grades obtained in grades nine and ten. These procedures are consistent with those used by Shaw and McCuen. As all subjects were of above average ability level, those subjects whose high school grade average was below the class mean were classified as underachievers ($n = 14$); those whose grade average was above the class mean were classified as achievers ($n = 29$). The two groups did not differ in mean IQ scores.

Instruments

Other-direction was measured by a scale constructed by Collins, et al. (1973) for that purpose. They define a person scoring high on this scale as one who "explicitly acknowledges that the direction for his own behaviors comes from other people" (Collins et al., 1973, p. 478). Orientation towards women's roles was measured by ten items adapted from the Attitudes toward Women Scale (Spence, Helmreich, & Stapp, 1973). Achievement indices consisted of yearly grade averages for grades two through ten and mean percentile scores on verbal and mathematical achievement tests in grades nine and ten.

Procedure

The subjects were administered the measures of attitudes toward women and other-direction by their homeroom teachers. Following the receipt of parental consent forms, achievement data were collected from school records, and data analyses were performed.

Results

The grades for each year were first analyzed for evidence of achieving and underachieving patterns. This data revealed a significant difference ($p < .01$) in the grades of underachieving and achieving groups beginning at grade six and continuing through grade ten. Prior to grade six the grades of the two groups did not differ significantly. Examination of the grade patterns indicated that the change was due to a drop in the grades of the underachieving group while those of the achieving group remained remarkably stable.

A series of one-way analyses of variance were then performed to examine the relationship between the independent variables of other-direction and attitudes toward women and the various indices of achievement. Achieving and underachieving groups were combined for these analyses in order to maintain the full range of variability in achievement. Achievement indices consisted of mean high school grades and achievement test scores.

A significant main effect was found for the measure of other-direction with mathematical achievement test scores, $F(1,40) = 10.30$, $p < .01$, with those subjects scoring below the median on the measure of other-direction having higher test scores ($M = 68.75$) than those subjects revealing a higher degree of other-direction ($M = 49.70$). No significant effects were found for other-direction with the other two indices of achievement.

Significant main effects for attitudes toward women were found with both high school grades, $F(1,42) = 6.53$, $p < .01$, and mathematical achievement test scores, $F(1,42) = 6.32$, $p < .05$, with those subjects revealing a more liberal orientation on the women's role measure having higher scores on

those two achievement measures ($\bar{M} = 86.90$; $\bar{M} = 68.57$, respectively) than those subjects revealing a more traditional orientation ($\bar{M} = 81.80$; $\bar{M} = 53.90$, respectively). The relationship with verbal achievement was not significant.

Discussion

The results concerning the pattern of academic underachievement in bright females do essentially replicate the earlier findings of Shaw and McCuen in that no significant differences between groups were found in the earlier grades and the status of the underachievers was due to a decline in their grade averages rather than to a rise in the grades of the achieving group. The earlier decline in the achievement levels of the underachieving group in this study may be partially attributable to changes in the adolescent subculture from the time of Shaw and McCuen's research to today.

The results of this study lend support to the hypothesized relationship between other-direction and academic achievement in the area of mathematics. Maccoby and Jacklin (1974) have confirmed the traditional notion that females tend to perform more poorly in mathematical areas than do males, particularly in the later school years. The findings of this study suggest that as girls pick up the notion that mathematics is a masculine area of expertise, those who are more subject to the influence of others perform less well in the mathematical area than do those who are less susceptible to the opinions of their peers. The achievement measures of overall grade average and verbal achievement test scores may not reflect the influence of peer values so strongly as these areas are more androgenous in connotation. Stein and Smithells (1969) provide support for this view reporting that mathematics is viewed by both male and female students as a

more masculine subject area, while reading is viewed as a more feminine area; these views were found to become progressively stronger in later school years.

The results concerning other-direction and mathematical achievement are complemented by the findings concerning the relationship between subjects' attitudes toward women's roles and their achievement. Previous research reveals an increased incidence of underachievement for bright females in college and post-school years (Bayley & Eden, 1955; Maccoby & Jacklin, 1974). At this stage, the relationship seen here between mathematics, other-direction, and attitudes toward women may become a relevant factor in other achievement areas concerning career choice and later career success which may have the same negative connotation as mathematics in that they are less likely to receive peer approval than other, more sex-appropriate areas of expertise.

Both self-esteem and locus of control have been hypothesized as contributing factors to the drop in women's achievement in the post-school world; however, neither concept has been supported in the literature as differences between males and females have been inconsistent (Maccoby & Jacklin, 1974). Rather than locus of control, this author believes the drop in women's achievement may be due to a combination of the factors of other-direction and a traditional view of women's roles. Research has demonstrated that by adolescence the negative affect toward female success is already established in both males and females (Monahan, Kuhn, & Shaver, 1974). The results of the present study suggest that those females who are more other-directed and traditional in their view of women's roles are more

directly affected by these negative connotations. Given the ambiguous feelings toward personal achievement that my result, many females may look to a different and less career-oriented area for self-satisfaction.

Previous conflicting findings on the relationship between locus of control and achievement could have been confounded by the factor of other-direction which, while related to externality, is a subset of the construct which excludes the personal potency factor. Future investigations of achievement, particularly those involving women, should take this factor into account. The relationship of other-direction to male achievement should also be examined, although it seems likely that the same relationship would not be demonstrated given societal attitudes concerning male achievement.

In summary, the results of this study shed some light on the prediction of underachievement and the factors associated with it. Implications may be drawn for research in locus of control and achievement and the investigation of female underachievement in college and post-school years.